

## Honeybee Pests

*Tropalaelops clarea*

Montana is one of the top honey producers in the United States. However, while the honey (and side products such as beeswax) are important commodities, the most important service provided by Montana's honeybees is pollination in other states during the early spring months (February through May). Over 100,000 hives leave Montana, bound for California, Washington, and Oregon, and almond groves, apple orchards, and numerous other fruit plantings. As a result, pests of honeybees are regarded as serious threats to the industry (which is the tenth largest source of agricultural income in Montana).

In the fall of 2006, it became obvious that a new threat was facing honeybees in the United States. The syndrome, which was characterized by rapid disappearance of worker bees from established, apparently healthy hives, was ultimately named "Colony Collapse Disorder", or CCD. While it was (and remains) a major threat to the industry, it also resulted in a large amount of attention being paid to an industry that, while major in its impact, consists of a very small number of very independent operators. As a result, although threats to the industry can (and do) have a very major impact on the entire U. S. agricultural system, overall, they are not visible to the general public.

Colony Collapse Disorder resulted in news articles in every portion of that industry. This interest in honeybees translated into CAPS interest, which resulted in a Pilot Project for Honeybee Health, embarked upon late in the year.

The objective of this study was to determine if the mite, *Tropalaelops clarea*, was present in honeybee colonies in two states in the U. S. These two states were Montana and Florida. Both states have relatively large numbers of migratory beekeepers, with large numbers of hives, and both states have well-established methods for inspecting those operations (as well as legal authority to do so). A secondary objective was to determine to time and training component of inspecting large numbers of hives and taking samples for laboratory analysis.



Honeybees near Stanford, Montana, and *Varroa* mite (left) versus *Tropalaelops clarea* (another mite) (right).

During the months of September and October, apiary inspectors in Montana gathered 30 samples from apiary sites operated by eleven different beekeepers. Those samples were submitted to the USDA ARS laboratory in Beltsville, Maryland for additional analysis.

Each sample consisted of at least 1,250 bees gathered from the hives as they were inspected. Each hive was opened by the beekeeper. The inspector examined the top cover, the inner cover, and the bees on the top of the frames as the hive was opened, looking for pests and other problems, such as excessive burr comb. The beekeeper then found a frame with brood, and the after checking to make sure the queen was not present, the inspector brushed about 50 bees into a wide-mouth collecting jar (1 liter) half filled with alcohol. If a yard contained less than 25 hives, all the hives were sampled, if possible. In larger yards, from 25 to 30 hives were sampled. The sample was then labeled with the GPS location, the date, the inspector, the number of hives present, and the number of hives opened. In some cases, the sample was further processed in the field, with the alcohol being removed by straining the sample through a filter composed of two layers of paper towel. The paper towel containing the sample was then placed in a zipper-type plastic bag, with the label. The entire plastic bag was then placed in a second plastic bag, so the samples could be shipped to the laboratory in Helena.

At the laboratory in Helena, all samples were placed in plastic 1 liter bottles with 500 mls of ethanol. The sample was then agitated for 1 minute, and strained through a 30 mesh sieve. The bees were put back into the jar, which was labeled and put into the refrigerator for storage. The remaining material was strained through a paper towel filter, and placed, with any other paper towels, into a plastic zipper type bag with a label. These were then stored in the refrigerator until they could be sent to Beltsville for additional processing. At the present time, results from Beltsville are not available.

To prepare for the survey took over 100 hours. Some time was spent attempting to determine which operations would give the best representation of the various types of commercial beekeepers throughout Montana. Additional time was spent interfacing with APHIS PPQ and other groups regarding equipment, and actual protocols. Some additional time (40 hours) was spent making sure the various inspectors knew the protocols that they needed to follow. In total, inspectors spent over 100 hours in the field, with nearly half of that time being spent in transit to the yards. To get to the various yards, the inspectors traveled over 2,300 miles. Additional processing in Helena took nearly 75 hours. At present, it is unknown what time and material will be expended by the USDA ARS laboratory in Beltsville.

This survey did not really result in an accurate representation of what it would take to inspect a statistically representative sample of Montana's bees. However, with proper preparation, inspection of the many types of operations could be achieved over a relatively short inspection schedule. However, because of the current shortage of manpower, such a survey would have to be spread out over a number of years. Currently Montana does inspect all apiary operations on a regular basis.